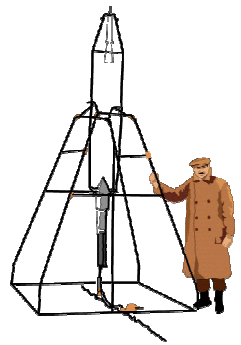
Code 580

Information Systems Center All-Hands

Tuesday, June 1, 1999

Agenda

- **Intro and ISC Profile**
- **Future Missions (Steve Tompkins)**
- **ISC Technology Roadmap/Process**
- **Status Report Outs**
  - **Info Sys Activities/Programs**
  - **Safety/Property/Security**
  - **ISO**
  - **Promotion Process**
  - **Hiring Plan**
- **Open Q&A**



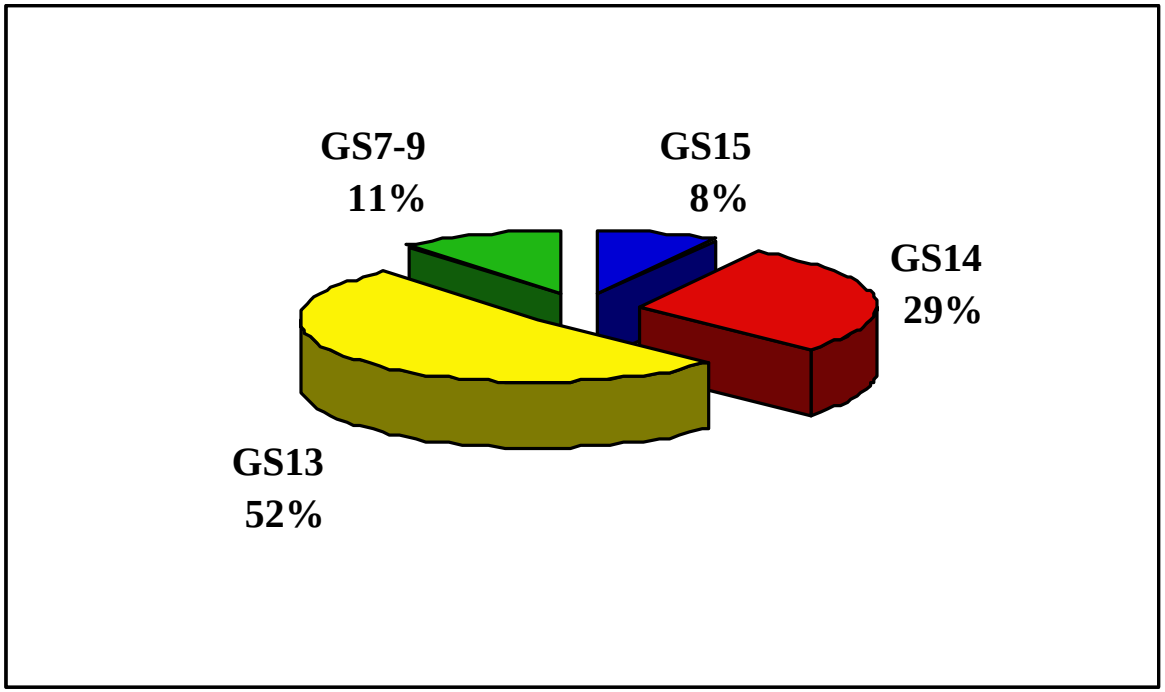
Some ISC Stats

- AETD makes up 36% of GSFC workforce
- ISC makes up 26% of AETD workforce
- As of 5/31, ISC has
  - 303 civil servants
    - includes 12 part time
    - 2 telecommuting
- Since the reorg (1/98)
  - 14 resignations
  - 18 retirements
  - 4 transfers from Code M centers
  - 7 transfers from Code 600/900 (2nd wave)
  - 315 travel orders
    - 16 international trips
    - 56 technical conferences

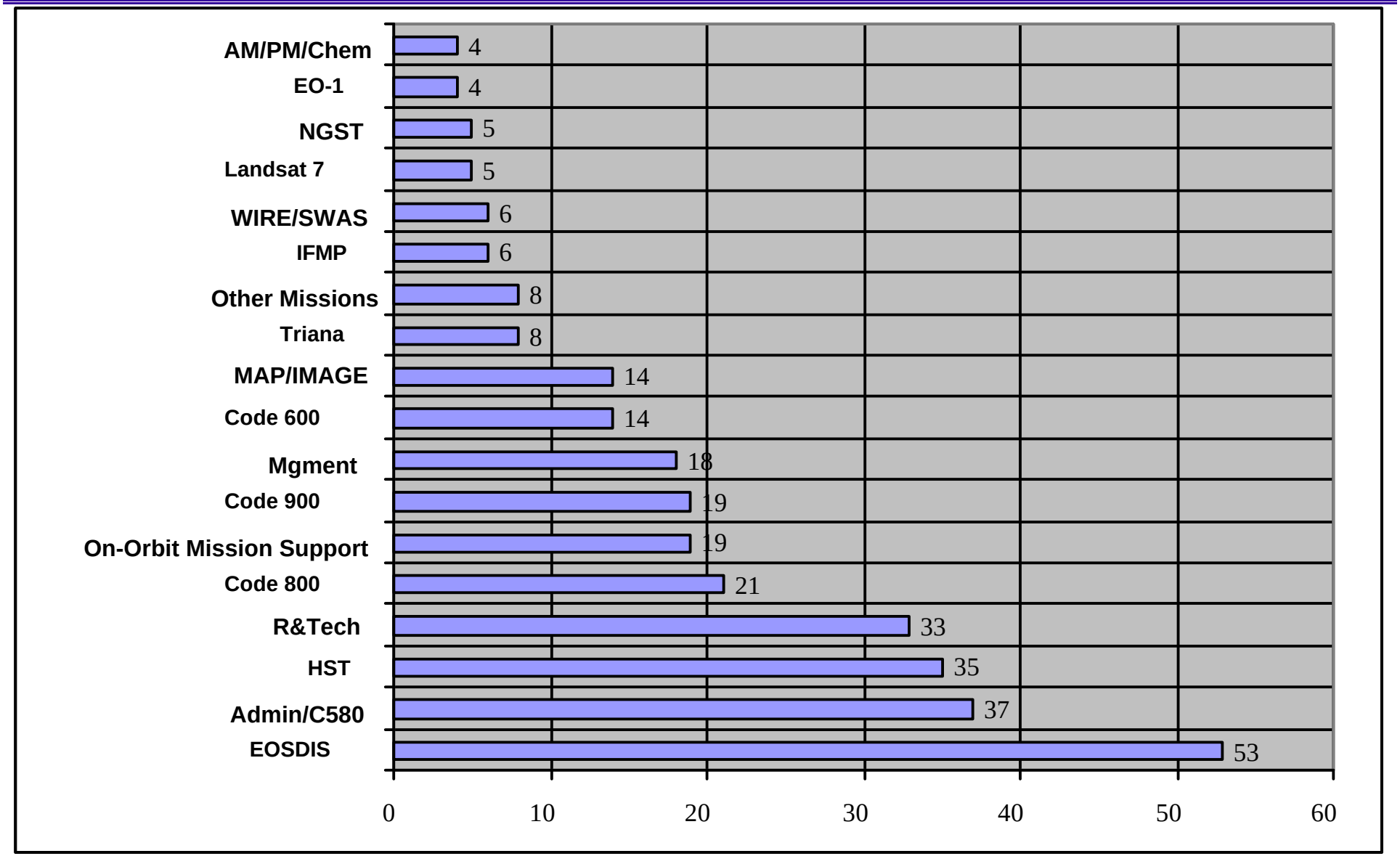
- 612 training orders
  - 75 academic courses
  - 43 technical conferences

ISC Grade Level Profile

GRADE	Count	Supervisors	Non-supervisors
GS15	25 (8%)	2%	6%
GS14	87 (29%)	4%	25%
GS13	157 (52%)	0%	52%
≤GS11	34 (11%)	0%	11%



Project Distribution



ISC Workforce Summary Points

- 65% of 13/14/15 resources are matrixed to large, critical missions aligned with GSFC strategic direction (e.g., ESDIS and EOS missions, HST, R&D)

- Civil servants doing hands-on work are also in leadership roles - due to experience level and expertise

- Data is representative of the paradigm shift to government leadership and contractor execution, in c.s.-contractor teams
  - Shift toward technical leadership evident in grade structure for both in-house and out-of-house work
  - Leadership roles encompass significant technical and programmatic management of contractor professionals. For example:

	Directed Contractors	Note
ESDIS	921	Includes Direct Support (162) & Mission contractors (759), but not DAACS
HST	230	does not included flight sw or STScI
R&D	76	significant hands-on at GS13 level
SOMO CSOC/nonCSOC)	347	Biased toward contract management
Flight Software	120	

→ **ISC workforce is well aligned with agency strategic directions**

Software...

- Can't touch it
- Can't see it
- Requires a computer to make it and use it
- Missions require it for …
  - Program formulation — IMDC, ISAL, ISE, distributed computing, knowledge management
  - Project Management — Requirements, Schedules, Budgets, Reviews, Contracts
  - Design/development — FSW (C&DH, G&C), C&C, P&S, H&S, data processing, archival, retrieval, distribution, visualization SE dev tools, CAD/CAM, information management
  - Test & Integration — I&T, V&V, s/c simulators,instrument simulators, system modeling
  - Mission Execution/Ops — Mission management, Sustaining engineering, observation proposals, automation
  - Science Discovery — Image processing, analysis and visualization, collaborative science
- Dependency on information systems/technology is growing for missions and in everyday life

Code 580

ISC: End-to-End Information Systems Providers

Branch	Functional Area/Products	Services	Customer Projects/Org
581/Systems Integration and Engineering *Joe Hennessy (acting), Howard Kea, Margaret Caulfield*	End-to-end data systems engineering of ISC mission systems development activities.	Mission directors, ground sys/flight ops management, sys. eng., flight prep support, SW eng, Sys I&T, AO prep	EOSDIS, HST, STAAC, NGST, MAP, IMAGE, TRACE, POES, AGS, on-orbit missions
582/Flight Software *Elaine Shell, Ray Whitley, Lisa Shears*	Embedded spacecraft, instrument and hardware component softwares; FSW testbeds	End-to-end FSW development; simulation s/w; spacecraft sustaining engineering	HST, MAP, TRMM, EO-1, SMEX, SMEX-lite, SPARTAN, EOS AM/PM/Chem, GLAS, XRS XDS, POES, NGST, XTE, EUVE, GRO
583/Mission Applications *Henry Murray, Scott Green*	Off-line mission data systems (e.g., Command man., s/c mission and science P&S, GN&C, NCC	Sys. eng.& implementation, COTs application, testbeds for concept proof/prototyping in ops environment	NCC SPSR, LS7, EO-1, EOS AM1, HST, TRACE, 930, IMAGE SOC
584/Real-Time Software Engineering *Barb Pfarr, Jay Pittman/WFF, John Donohue*	Real-time ground mission data systems for I&T and on-orbit ops (e.g., s/c command & control, launch and tracking services)	Sys. eng.& implementation, COTs application, simulators, testbeds for concept proof/prototyping in ops env.	HST, WFF, ISTP, IMAGE, MAP, SMEX, TRACE,WIRE, EO-1, LS7, HITCHHIKER, SPARTAN, EOS, NGST
585/Computing Environments and Technology *Howard Eiserike, Steve Naus*	Tools and services in support of information management	Hands-on sys admin., network manage., business/support tool develop, WWW application	EOSDIS, IFMP, 630, 930, HST, WSC, 250, 450, HST
586/Science Data Systems *Mary Ann Esfandiari, Mary Reph*	Science data systems including data processing, archival, distribution, analysis & info man.	Sys. eng.& implementation, COTs application & integration, testbeds, prototyping	EOSDIS, LS7, TRACE, TRMM, HST
587/Advanced Data Management and Analysis *M. Esfandiari (acting), Jim Byrnes*	Advanced concept development for archival, retrieval, display, dissemination of science data	Next-gen req. development, testbed for sys evaluation, prototype products	FAST, NEAR, WIND, 922, ULYSSES, 632, 686, 694, 930
588/Advanced Architectures & Autonomy *Julie Breed*	Technology R&D focused on space-ground automation sys. and advanced architectures	Sys. eng & implementation, human-computer eng., technology evaluations, concept prototypes, sw eng. methods	NCC, STAAC, SOMO, Code SM, EOSDIS, MIDEX, NGST

Future Missions Briefing

ISC: responsive to the changing NASA environment

- Yesterday…
  - Ground data system development "our way" (from scratch)
  - Retrofitting operating missions with IT cost-savers
  - Primarily non-competitive funding of technology (Code O)
  - Barriers between engineers and science PIs

- Today & Tomorrow…
  - First-of-a-kind innovations and developments
  - Innovative application of COTs
  - Proactive role in program formulation and technology infusion (e.g., IMDC, ISAL, ISE, technology roadmapping)
  - Teaming with external partners for limited technology $$s
  - PI involvement in solutions
  - Closely aligned to Enterprise needs and directions
  - ***More focus on enabling science***

Why is Information Technology on the GSFC radar screen today?

- IT is mission critical and must be a GSFC core competence today and tomorrow
  - Steps must be taken now to meet the IT requirements presented by the GSFC 2003 mission view and to ensure GSFC's ability to compete for future mission opportunities
- IT is growing in importance and evolving at a rapid pace
- Challenges of future missions require software innovation
  - Reduced development schedule
  - Reduced operations oversight
  - Tighter budgets
  - Accelerated new technology requirements
  - Growing complexity and increasing system autonomy = new challenges in software testing and validation
  - Increasing external competition for IT professionals

Information Systems within GSFC

Application / Org	Administrative	Mission Support	Science Data Processing/Analysis	GSFC Infrastructure
Code 100	User			User
Code 200	User Provider: C290			User Provider: C290
Code 300	User	User Provider: C302		User
Code 400	User	User	User	User
Code 500	User Provider: C580	Provider:C580	Provider:C580	User Provider: C290
Code 600	User	User: PIs	User Provider:C630	User
Code 700	User			User
Code 800	User	User		User
Code 900	User	User: PIs	User Provider:C902, C930	

Characteristics of Future Missions

- Smaller, multiple spacecraft and constellation
- Distributed sensing systems
- On-board science processing
- High volume/High rate of science data to process, manage, archive, distribute
- Flexible, reconfigurable, evolutionary science systems
- Rapid, on demand data communication
- Standards-based space/ground communication
- Inter-spacecraft high-speed communication
- Low life-cycle cost
- Testing of large number of similar or identical spacecraft
- Operations of large number of similar or identical spacecraft
- Fully Autonomous systems and operation
- Immersive Human/Machine Environments

Technology Process/Roadmap Briefing

Information System Activities

- NASA-wide
  - Intelligent Synthesis Environment (ISE) http://ise.larc.nasa.gov
  - Information Technology for the 21st Century (IT^2)
    - President's Information Technology Advisory Committee (PITAC) www.ccic.gov/ac/interim
    - National Research Council response
  - Digital Earth www.opengis.org/info/pubaffairs/ALGORE.htm

- GSFC
  - Friends of Information Science
  - Associate Center Director for Information Science - Milt Halem
  - Information Technology Federation
  - IMDC/ISAL
- ISC
  - Software Engineering Lab http://sel.gsfc.nasa.gov/
  - Usability Engineering Lab
  - TEAs http://aaaprod/teas/

ISC ISO/QMS Status

- All ISC Product Teams within scope have done an exceptional job in putting their Product Plans together
- Product Teams and personnel working for other teams in other organizations within scope must now FOLLOW their plans and prepare for audits
- because……..

Upcoming Audit Activities

- 47 internal GSFC audits of Code 500 scheduled for weeks of June 28 and July 5
- Unknown number of internal GSFC audits of Code 400 Projects scheduled for month of July
- ISC Product Teams will have an internal audit by Code 580 internal auditors in July
- GSFC Registration Audit is set for August 30
- GSFC must pass the registration audit by September 30,1999

Special Thanks to Gary Meyers and Sally Godfrey!

Security, Property, Safety

"… the times, they are a changing"

- Security: Art Hughes
- Property: Les Wentz
- Facility Managers: Quinton Barker - B3/14
  Les Wentz - B23
  Hal Domchick - B28 (deputy)
- Safety: Bill Kelly

New Promotion Process

- Check out GSFC OHR web site for details on new process
- Pre-New Process: Review/Promotion of workforce in higher FPL with > average Time-in-Grade
  - In ISC, resulted in 12 GS14/15 Promotions, 9 GS13 Promotions
- New Process began with Accretion cases (in progress)
- No MURC
- Review/Advisory discipline teams (cross-Center)
  - Engineering, Administrative, Scientist, Project Management, …
  - Check against criteria for senior level positions
  - Cases only go to Review team with promotion point
- Open discussions with supervisor about promotion criteria and employee's position and performance encouraged

ISC Outside Hires

Seasoned - 8 approved hires

4 FSW Lead Engineers (*HST*, NGST, ACS expertise, program formulation, instruments)

2 Mission Directors (TOMS/UARS, TRMM)

2 EOSDIS (Lead Science Data Systems Engineer (Interface Manager) & Science Data Systems Engineer (Development Engineer)

Freshout - 5 approved hires

- 584/Wallops
- 585/web development
- 586 & 587/science analysis
- 588/advanced architectures

Secretary - 2 approved outside hires / 1 gov't-wide

Coops - 2 approved hires

- 584/Wallops
- Code 585